

## ABSTRACT

**Background:** Mesiodistal width of a tooth is the most fundamental aspect of tooth morphology with regard to arch length tooth size compatibility in mixed dentition phase. In order to identify such space discrepancies, different methods of mixed dentition space analyses such as Moyers prediction tables and Tanaka Johnston's equations were widely used. In 2007, Melgaco introduced a new method of analysis by measuring the sum of mandibular first permanent molars and permanent incisors.

**Aim:** Comparison of the efficacy of mandibular permanent first molars and incisors as predictors of mandibular permanent canine and premolar widths with Moyer's and Tanaka-Johnston analysis in class I malocclusion patients in Chennai population.

**Materials and methods:** The study sample consisted of 200 pretreatment study models of mandibular arch of patients with Angle's class I malocclusion who were undergoing treatment in the Department of Orthodontics and Dentofacial Orthopedics, Tamil Nadu Government Dental College and Hospital, Chennai, Tamil Nadu, India. Digital Vernier Caliper with accuracy of .01mm with narrow tips was used to measure the mesiodistal widths of all the teeth.

**Results:** From the findings observed in this present study it was concluded that Moyer's analysis underestimated the measured width where as Tanaka Johnston's and Melgaco's overestimated the measured width. When the comparison was made between the Gender wise Measured and Predicted Mean Values on one side, males were having more difference from the measured width than females. When the comparison was made between the Gender wise Measured and Predicted Mean Values on both sides, females were having more difference

from the measured width than males. On comparison of the Gender wise Mean of Absolute Differences, males were having more difference from measured width than females. The Mean absolute percentage differences indicate that if all the three predictions were not accurate for predicting the actual measured widths, Melgaco's predictions were comparatively more close to actual measured width than Moyer's and Tanaka Johnston's predicted values. According to the mean absolute percentage difference for Males, Moyer's and Tanaka Johnston's predictions were more close to the mean actual measured width than Melgaco's. According to the mean absolute percentage difference for Females, Melgaco's(4.0) predicted values were more close to the mean actual measured width followed by Moyer's(4.3) and Tanaka Johnston's(4.6) predicted values.

**Conclusion:** The study has helped to understand the efficacy of three different mixed dentition analyses in Chennai population which helps our orthodontic treatment to be done in a more interceptive pattern with less harm and treatment duration for the patient. Further studies are still required with more number of samples for the study to be valid in a wider range.

**Keywords:** Mixed dentition analysis, Moyer's analysis, Tanaka Johnston's analysis, Melgaco's analysis.